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THE MINERAL QUALITY PROBLEM IN THE COLORADO RIVER BASIN. APPENDIX D. COMMENTS ON DRAFT REPORT

Environmental Protection Agency
Denver, Colorado

1971

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THE MINERAL QUALITY PROBLEM IN THE COLORADO RIVER BASIN

APPENDIX D

COMMENTS ON DRAFT REPORT

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGIONS VIII AND IX

1971

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THE ENVIRONMENTAL PROTECTION AGENCY

The Environmental Protection Agency was established by Reorganization Plan No. 3 of 1970 and became operative on December 2, 1970. The EPA consolidates in one agency Federal control programs involving air and water pollution, solid waste management, pesticides, radiation and noise. This report was prepared over a period of eight years by water program components of EPA and their predecessor agencies -- the Federal Water Quality Administration, U.S. Department of Interior, April 1970 to December 1970; the Division of Water Supply and Pollution Control, U.S. Public Health Service, prior to October 1965. Throughout the report one or more of these agencies will be mentioned and should be considered as a part of a single agency -- in evolution.

PREFACE

The Colorado River Basin Water Quality Control Project was established as a result of recommendations made at the first session of a joint Federal-State "Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and its Tributaries," held in January of 1960 under the authority of Section 8 of the Federal Water Pollution Control Act (33 U.S.C. 466 et seq.). This conference was called at the request of the States of Arizona, California, Colorado, Nevada, New Mexico, and Utah to consider all types of water pollution in the Colorado River Basin. The Project serves as the technical arm of the conference and provides the conferees with detailed information on water uses, the nature and extent of pollution problems and their effects on water users, and recommended measures for control of pollution in the Colorado River Basin.

The Project has carried out extensive field investigations along with detailed engineering and economic studies to accomplish the following objectives:

(1) Determine the location, magnitude, and causes of interstate pollution of the Colorado River and its tributaries.

(2) Determine and evaluate the nature and magnitude of the damages to water users caused by various types of pollution.

(3) Develop, evaluate, and recommend measures and programs for controlling or minimizing interstate water pollution problems.

In 1963, based upon recommendations of the conferees, the Project began detailed studies of the mineral quality problem in the Colorado River Basin. Mineral quality, commonly known as salinity, is a complex Basin-wide problem that is becoming increasingly important to users of Colorado River water. Due to the nature, extent, and impact of the salinity problem, the Project extended certain of its activities over the entire Colorado River Basin and the Southern California water service area.

The more significant findings and data from the Project's salinity studies and related pertinent information are summarized in the report entitled, "The Mineral Quality Problem in the Colorado River Basin." Detailed information pertaining to the methodology and findings of the Project's salinity studies are presented in three appendices to that report -- Appendix A, "Natural and Man-Made Conditions Affecting Mineral Quality," Appendix B, "Physical and Economic Impacts," and Appendix C, "Salinity Control and Management Aspects."

Copies of the draft report, including the three appendices, were distributed to state and Federal government agencies in April. Comments, received in response to that distribution, are included in this appendix. The comments are organized alphabetically by state. Within each state heading, comments from the appropriate Conferee are placed first, followed by comments from other state agencies. Comments from other recipients of the

distribution conclude the appendix.

Due to minor editorial changes, page numbers in the draft report as referenced in various state comments may not always correspond to page numbers in the final report.

ARIZONA

Arizona State Department of Health

ARIZONA STATE OFFICE BUILDING
1624 WEST ADAMS STREET
PHOENIX, ARIZONA 85007

LOUIS C. KOSSUTH, M.D., M.P.H.
Commissioner of Health

REPLY TO:
ENVIRONMENTAL HEALTH SERVICES
DIVISION OF WATER POLLUTION CONTROL
Hayden Plaza West
4019 North 33rd Avenue
Phoenix, Arizona 85017

June 23, 1971

Mr. Paul DeFalco, Director
Water Quality Office
Environmental Protection Agency
Region IX
760 Market Street
San Francisco, California 94102

Dear Mr. DeFalco:

This letter is in regard to the November 1970 draft entitled "The Mineral Quality Problem in the Colorado River Basin". Copies of this document were reviewed by various persons in the State having an interest in water quality control. Our review of the document indicated that there was very little material that related to the State water pollution control program except in the area of mineral quality. Since the subject matter was principally mineral quality and this subject may have considerable impact on Arizona's existing and planned water resources utilization of Colorado River waters, we requested the Arizona Water Commission to make a thorough review of the material contained therein for possible impact on Arizona.

We have received their comments and a copy of their letter is enclosed. We concur with their comments in their entirety and ask that they be considered as Arizona's official comments on this document.

If you have any questions or comments regarding this matter, please feel free to contact us or Mr. Steiner of the Arizona Water Commission.

Sincerely,

Joseph E. Obr

Joseph E. Obr, M.S.E., Director
Division of Water Pollution Control

JEO:jd

Enclosure

cc: Wesley E. Steiner, Arizona Water Commission
Cliff Tabor, Ariz. Water Quality Control Council
Edmund C. Garthe

GEORGE E. LEONARD
CHAIRMAN
JOHN S. HOOPES
VICE-CHAIRMAN
WESLEY E. STEINER
EXECUTIVE DIRECTOR
AND
STATE WATER ENGINEER

Arizona Water Commission
34 WEST MONROE STREET - 7TH FLOOR
Phoenix, Arizona 85003
TELEPHONE (602) 258-7561

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JUN 1971
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June 9, 1971

Mr. Edmund C. Garthe, Arizona Conferee
Colorado River Basin Water Quality Conference
Environmental Health Services
State Department of Health
4019 North 33rd Avenue
Phoenix, Arizona 85017

Dear Mr. Garthe:

This is to present our review comments on the November 1970 draft entitled "The Mineral Quality Problem in the Colorado River Basin" published by the Federal Water Quality Administration of the U. S. Department of the Interior. Observations submitted herein are confined to the substantive issues involved with specific emphasis on the final recommendations which are presented on page 7 in the summary report.

Comments on the Summary Recommendations

No. 1. We strongly support this recommendation. A coordinated state-federal basin-wide salinity improvement program could then be developed under a realistic broad base policy objective.

No. 2,3. These recommendations should be deleted and no effort should be made to adopt numerical salinity criteria until such time as the feasibility and effectiveness of a Colorado River salinity control program can be determined and realistic criteria can be advanced.

No. 4. This recommendation seems unnecessary as qualified existing governmental agencies already have the necessary capabilities and authorities. There is no need to form another agency. The U. S. Bureau of Reclamation has already commenced feasibility studies on some salinity control projects. Because of its role as water master on the Colorado and the interrelationship between salinity and water resources development, we believe the Bureau should assume the primary role in salinity control planning for the Colorado. A recommendation to this effect is in order. It should also be stressed

that the development of policy in the comprehensive basin-wide salinity control program should be the joint responsibility of the affected federal and state agencies.

No. 5. We strongly support this recommendation and urge that it be given the highest possible priority.

General Comments on text of Summary Report

Page 14 & 15, (Table I) The hydrologic period used in these studies is not necessarily representative of the average annual flows and conditions for the Colorado River. The period of record of river flows employed in the salinity analysis provides flows lower than those used by most other investigators on the Colorado River. This tends to provide lower predictions of future salinity conditions than would be the case with higher flows and uses. This fact should be recognized in the report.

Page 29, (para. 1,item3) The assumption that all of the Central Arizona Project water will be used for agricultural purposes is erroneous. The more realistic assumption would be that most of this project water will be utilized by municipal, industrial and other higher value uses by the year 2020.

Page 56 & 57, (para. 4 and following) There would appear to be no basis or justification for expending valuable time, funds, and energies in attempting to establish numerical limits or standards on salinity concentrations until more is known about the optimum quality levels that can be feasibly achieved. Rather maximum effort should first be exerted to determine the feasibility of salinity control programs and their effects on salinity levels.

If you have any further questions regarding these comments or believe that a different position should be presented on these issues, please contact Bob Farrer or myself.

Sincerely,

Wesley E. Steiner
Executive Director

WES:REFe

cc: Cliff Tabor, Chairman
Arizona Water Quality Control Council

CALIFORNIA

STATE OF CALIFORNIA—THE RESOURCES AGENCY

RONALD REAGAN, Governor

STATE WATER RESOURCES CONTROL BOARD
ROOM 1140, RESOURCES BUILDING
1416 NINTH STREET • SACRAMENTO 95814

Phone 445-3993

CERRY W. MULLIGAN, *Chairman*
E. F. DIBBLE, *Vice Chairman*
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W. W. ADAMS, *Member*
JEROME B. GILBERT, *Executive Officer*

JUN 4 - 1971

Mr. Paul De Falco, Jr., Regional Director
Water Quality Office, Region IX
Environmental Protection Agency
760 Market Street
San Francisco, California 94102

Dear Mr. De Falco:

In accordance with your letter of April 5, 1971, the State of California has the following comments on your agency's draft report, "Mineral Quality Problem in the Colorado River Basin", dated November 1970. As the State's conferee the State Water Resources Control Board, in cooperation with the Department of Water Resources and the Colorado River Board, has analyzed the draft report and has coordinated the State's reply. In addition, we have solicited the views of the major California agencies receiving water from the Colorado River, and their views are also incorporated herein.

Our comments are divided into three general groupings:

1. Comments on the report's Recommendations and Summary of Findings.

2. General comments on specific subjects.

3. Specific comments on items identified by reference to particular pages.

Our comments on the Recommendations and Summary of Findings are as follows, and the other comments are attached to this letter.

COMMENTS ON RECOMMENDATIONS

Recommendation No. 1

We strongly endorse this recommendation. However, the term "levels presently found" needs definition. We suggest those be defined as the average of the five-year period from 1963-67.

Recommendation No. 2

This recommendation should be deleted. The adoption of numerical criteria should be deferred until the potential effectiveness of Colorado River salinity control programs are better known. Salinity control will be achieved most rapidly by following through with the program outlined in your Recommendation No. 5.

Recommendation No. 3

We see no value in establishing a federal-state task force on numerical salinity criteria at this time. Such a task force should be deferred until more is known about the proposed salinity control measures.

Recommendation No. 4

Existing governmental agencies have the capabilities to carry out the necessary work and there is no need to form another agency. The U. S. Bureau of Reclamation (USBR) has commenced feasibility level studies on some salinity control projects in this fiscal year. Because of the interrelationship between salinity and water resources development and the USBR's long record of activity in the Colorado River Basin, it is the logical agency to assume the primary role in this work. We believe that your recommendation should support the USBR in this role and further recommend that the USBR elevate Colorado River salinity control to the status of a major action program.

Work on the program needs to be expedited. The USBR should be requested to establish a Colorado River Salinity Control Program with a director reporting to the USBR policy level authority in Washington. The director should be able to handle all aspects of the salinity problem including planning, implementation and institutional problems. There is precedent for this approach in handling a major program, inasmuch as the USBR recently established a Director of the Western United States Water Plan Study in a similar instance where a major program involved more than one region.

As the major federal water quality agency, EPA should assist the Salinity Control Program in a consulting and guidance capacity.

Recommendation No. 5

We strongly support this recommendation and suggest that it replace your Recommendation No. 2. The report should outline specifically how your agency would assist in implementing this

recommendation. The means of implementation that should be covered in recommendations to this report include: (1) the completion of ongoing research projects funded by EPA, (2) the initiation of additional research projects that would be funded by EPA that may be necessary to prove out the various salinity control measures proposed in the report, and (3) a statement as to the participation by your agency's competent Colorado River Basin Water Quality Office personnel in the feasibility study stage of analysis of the project.

COMMENTS ON SUMMARY OF FINDINGS

Mexico - Colorado River Salinity Problem

The report does not discuss the effect of increased Colorado River salinity on the relations between the United States and Mexico. Mexican officials have stated that the River's salinity is the outstanding problem between the two countries, and discussions have been held by the presidents of both countries on several occasions. It is not necessary to compute what the salinity would be at the Northerly International Boundary without salinity control projects. However, there should be a general discussion of the Mexican salinity problem in the text and a statement in the Summary of Findings that "Major international benefits would accrue to the United States by the implementation of a salinity control program to prevent increased salinity in the Colorado River water to be delivered to Mexico".

Other U. S. Salinity Control Programs

The report makes no mention of the precedent-setting work on salinity control programs in the Arkansas and Red River Basins in Texas and Oklahoma. In order to develop a perspective on the proposed program for the Colorado River Basin, it would be of great value if the report briefly mentioned the work that has been ongoing in that area for over ten years, the projects that have been authorized and the fact that the projects have been wholly federally funded. This item should be included in the Summary of Findings.

It is very important that your final report be released as soon as possible. We do not expect you to make any additional technical analyses because of our comments. It will be adequate to have the text of the report include discussions of our comments in sufficient detail so that a reader would understand the limitations on the data contained in the report and the general effect of other reasonable assumptions.

California appreciates the opportunity of reviewing this report. Our recommendations and comments are offered in the spirit of improving a basically sound document and making it more usable and widely accepted. Prompt issuance of the final report will make a valuable contribution to moving in the direction of preventing damaging salinity conditions on the Colorado River. We hope that the necessary changes will be effected so that the final report can be issued shortly.

Sincerely,

Jerome B. Gilbert
Executive Officer
(California Conferee on Pollution
of the Interstate Waters of the
Colorado River and its Tributaries)

Attachment

GENERAL COMMENTS

Upper Basin Depletions

The rate of future Upper Basin depletions is speculative. Estimates have been made by various agencies, including the Bureau of Reclamation in its 1969-70 Mead-Powell Operating Criteria studies, the Upper Colorado River Commission in its 1969-70 studies, the Federal-State 1970 Type I Framework studies for the Upper Colorado Region, and the Colorado River Board in its August 1970 report entitled "Need for Controlling Salinity of the Colorado River." Your projections are lower than those made in all of the above analyses. Your report projects new Upper Basin depletions, including transbasin diversions but excluding evaporation losses of 1,980,000 acre-feet by the year 2010. We believe that more probable projections, taking into account the analyses performed by other agencies, would be for new Upper Basin depletions exclusive of reservoir evaporation of 2,210,000 acre-feet by the year 2000 and 2,400,000 acre-feet by the year 2020.

Increased Upper Basin depletions will result in increased salinity in the Lower Basin. We do not suggest any additional technical analyses. It is recommended that the report state that other responsible agencies have projected higher Upper Basin depletions which would result in higher salinity concentrations.

Effect of Hydrologic Period

The hydrologic period used in your report, 1942-61, results in an estimated average annual virgin flow at Lee Ferry of about 13.4 million acre-feet (maf). This is lower than that used by other investigators on the Colorado River and tends to understate the severity of the salinity problem.

Use of the 1942-61 period understates the potential increase in salinity in the Lower Colorado River Basin for the following reasons:

a. The river's total salt load at Lee Ferry would be smaller under the runoff figures used, in comparison to higher estimates of the river's long-time water supply.

b. With the lower water supply, the Upper Basin is not able to develop to the extent that most other agencies have projected, thereby reducing the salinity effect of such developments.

c. Under conditions of complete Upper Basin use of its water supply, a fixed quantity of water would leave Lee Ferry. The smaller salt load obtained by use of the 1942-61 period carried in a fixed quantity of water will result in lower salinity concentrations than the higher salt load obtained by a larger long-term water supply and carried in the same quantity of water.

California, Arizona, and Nevada, in joint testimony before Congress on the Colorado River Basin Project Act in 1965, stated that the dependable yield of the river's virgin flow at Lee Ferry was about 13.7 to 14 maf/yr, and that there was a 50 percent chance of 14.9 maf/yr at Lee Ferry. At the same congressional hearings, the Upper Colorado River Commission's consulting engineers estimated a virgin water supply of 14.6 to 15 maf/yr. There are substantial spills associated with these volumes of runoff, indicating a dependable supply of about 13.7 maf/yr at Lee Ferry. At the same hearings, the U. S. Bureau of Reclamation used an average annual virgin flow of 15.05 maf/yr.

The August 1970 report of the Colorado River Board of California used 14 maf/yr annual virgin flow at Lee Ferry to determine salinity concentrations. This, combined with more recent estimates of Upper Basin depletions, resulted in a projected salinity at Imperial Dam of 1340 parts per million (ppm) for year 2000, assuming no salinity control projects. Your report projects 1223 ppm for year 2010.

We do not suggest that you change the hydrologic period at this late date or make any additional technical analyses. It is recommended that you state that use of higher water supply figures and higher Upper Basin depletions would result in salinity concentrations that are about 10 percent higher than reported.

Salinity Penalty Costs

Analysis of salinity penalty costs is a difficult and complex problem involving many factors and judgments. We reviewed the factors used in your analysis and compared them with other available material. We believe that the penalty costs developed in the report show the severity of the problem but must be considered minimum values. Our reasons for these conclusions are as follows:

a. In the report, the cost impact on urban uses is related almost entirely to the cost of softening hard water in central system softening plants. A number of recent technical articles and reports have stated that softening costs are only one aspect of the total cost impact in urban areas. A major cost impact is the deleterious effect of water high in salinity and in hardness on water purveyor facilities, on distribution systems, on the water pipes and appliances

within and on user premises, and on horticultural effects in residential and urban areas. The cost impact from these causes has been variously estimated by investigators to be no less than $5 per acre-foot of water used per 100 ppm increase in salinity. In addition to these costs discussed in various technical papers and reports, there are the costs resulting from increased use of bottled water, costs of maintaining private swimming pools, and the generally adverse effects of poor taste of high salinity water supplies.

b. The agricultural impacts of high salinity water are also understated in that they are predicated upon the yield-decrement method of analyzing cost impacts. Irrigators in California have not been accepting lower yields in accordance with the yield-decrement method, but have been spending millions of dollars attempting to maintain yields through installation of subterranean tile drains, increasing water applications, and changing to expensive methods of irrigation.

Reconnaissance Investigations

This section (page 63) should be rewritten to bring it up to date. It is our understanding that, since your report was drafted, the Bureau of Reclamation and the former Federal Water Quality Administration completed a joint reconnaissance report on salinity control projects. Based on the joint report and other work that has been done since its completion, there is sufficient reconnaissance information available to allow the commencement of feasibility studies on

more than just two of the seventeen projects. More research is needed on the behavior of return flows in agricultural salinity control projects, but this would not hamper the commencement of feasibility studies of salinity control on agricultural projects.

SPECIFIC COMMENTS--SUMMARY REPORT

Page 4, Item 1

The report states that salinity affects 800,000 irrigated acres located in the Lower Colorado River Basin and the Southern California service area. The latest published information (largely 1969 data) shows the following for irrigated acreage, including fallow land in some cases. Thus, the acres affected would be over 900,000.

California		
Imperial Irrigation District		475,700
Coachella Valley County Water District		66,700
Palo Verde Irrigation District		91,400
Bard Irrigation District		12,000
Miscellaneous		7,000
The Metropolitan Water District (estimate)		42,000
	Subtotal	694,800
Arizona		
Gila Project		98,300
Yuma Valley		48,000
Yuma Auxiliary		3,300
Colorado River Indian Reservation		51,100
Mojave Valley		4,800
Miscellaneous		12,000
	Subtotal	217,500
	Total	912,300

Page 4, Items 3 and 4

The resulting salinity is based upon "repetition" of the 1942-61 period and postulated rates of future water use. As previously mentioned, larger water supply quantities have been used to reflect the probable future flow of the river and with related increased depletions. It should be acknowledged that the salinity would be higher

with a larger water supply and increased Upper Basin use.

Page 5, Item 7

Since the methods used in the report to determine agricultural, municipal and industrial economic penalty costs excluded certain items, this finding should state that the costs are considered to be minimum values.

Page 5, Item 9a

It should be mentioned that a portion of an imported supply would have to be assigned to salinity control in order to achieve significant long-term improvement at Imperial Dam.

Page 6, Item 9b

The following phrase should be added in the first sentence after the word "pickup,": "reduction of volume of groundwater flow through saline formations by. . . ."

Page 8, Paragraph 3

The Colorado River Compact was signed by the negotiators on November 24, 1922; however, it did not become effective until the President's proclamation of June 25, 1929. Accordingly, we suggest adding the words "which went into effect in 1929," after the year "1922."

Pages 11 and 12

The writeup under "Water Compacts" should be corrected and expanded. Page 11, first paragraph, third line, replace "three" with "four"; fourth line, strike out "signed in 1922"; fifth line, strike out "and"; and in the sixth line, add the following: ", and by the Supreme Court Decree of 1964 in Arizona v. California."

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Page 11

Fifth paragraph, sixth line, capitalize "Upper Division."

Page 11

Fifth paragraph, after the last line add "Any water committed to Mexico . . . shall be supplied first from the waters which are surplus . . ."; and ". . . if such surplus shall prove insufficient for this purpose, then the burden of such deficiency shall be equally borne by the Upper Basin and the Lower Basin . . . ."

Page 12, Paragraph 1

Delete the last line and substitute the following: "The Lower Division apportionment was divided among the Lower Basin states--Arizona, California, and Nevada--by the decree of the United States Supreme Court in 1964 which states that apportionment was accomplished by the Boulder Canyon Project Act of 1929. If Colorado River mainstem water is available in sufficient quantity to satisfy 7,500,000 acre-feet of annual consumptive use in the three Lower Basin states, Arizona, Nevada, and California are apportioned 2,800,000, 300,000, and 4,400,000 acre-feet, respectively."

Page 12, Paragraph 2

The 1965 gross California diversions of 5.35 million acre-feet from the Colorado River were for use in both the Colorado Basin and Southern California service area portions not just the "Southern California service area." The diversions less measured returns to the river which approximate the Supreme Court Decree definition of consumptive use were 4.90 million acre-feet. The latter value should be used and the description changed to include the California areas

in the Lower Colorado area.

Page 12, Paragraph 3

Inasmuch as the report earlier separated water uses in the Southern California service area from inbasin uses, this distinction should be maintained. The discussion in this paragraph apparently makes no such distinction and should be revised accordingly. We also suggest striking out the first sentence, as it is redundant.

Page 17, Second Paragraph

In this and subsequent paragraphs, it should be clearly stated that the salt load data shown for Lake Mead or the "above Hoover Dam" point include the salt loads shown for the Upper Basin.

Pages 17 and 18, Section Headed "Present and Future Salinity Concentrations"

Our prior comments pertaining to the use of the 1942-61 hydrologic period should be applied to this section. It should be revised to include a brief discussion of the impact on Lower Basin salinities of higher runoff and resulting increases in Upper Basin depletions.

Page 20, Paragraph 2

It appears that, through examination of Appendix B, the irrigated agricultural expansion now under way on the Colorado River Indian Reservation was not taken into account for the conditions of limited development postulated in this paragraph. The full expansion planned on this reservation will result in a significant increase in salinity at Imperial Dam and should be acknowledged in the report.

Page 20, Last Paragraph

The statement in the first sentence regarding a relatively constant salt load for the next 40 years and the statement in the last

sentence pointing out increases in salt loading appear to be in conflict.

Page 23, Paragraph One

The term "threshold level of sensitivity" should be explained in more detail.

Pages 23 through 27

The discussion of the effects of salinity on beneficial uses of water and direct economic effects upon water users should be expanded along the lines discussed earlier. While we do not believe that it is necessary to develop revised numerical results, it should be mentioned that the results are considered to be minimum values.

Table 7, Page 41

The salinity control programs shown in Table 7 that are based on flow augmentation should not be considered alternatives and compared on an equal basis with the other possibilities listed in the table. At this time, these flow augmentation alternatives are subject to such great uncertainities that their inclusion in the table is more likely to cause confusion and result in misleading conclusions as to the best course of action. For example, weather modification is now only in the research phase. Accordingly, we recommend that costs associated therewith be omitted, together with explanatory footnotes. We also recommend that augmentation by geothermal sources be included in the table and briefly discussed in the text.

SPECIFIC COMMENTS--APPENDIX A

Page 85

The report states that irrigation in the San Rafael River area

contributed 100 tons of salt per day to the Price River. This should be corrected.

SPECIFIC COMMENTS--APPENDIX B

Page 6

The discussion of the effects of salinity on domestic uses of water should acknowledge bottled water costs, additional costs of maintaining private swimming pools, and costs related to horticultural use of softened water as a result of high sodium concentration, even though not evaluated in your determination of penalty costs.

Page 18

The second full paragraph concludes that soils in the southwest will generally accept an increase in the amount of irrigation water applied for leaching. This conclusion is questionable since there are major irrigated areas in the southwest requiring elaborate drainage systems.

Page 26

The statement on groundwater in the last sentence of the second full paragraph should be deleted since it is not accurate for the entire basin.

Page 46

The first full sentence states the mean annual virgin flow at Lees Ferry for the period 1942-61 to be 13.8 maf. Records published by the USBR show the virgin flow for that period to be 13.35 maf.

Pages 48 and 49

The projected future depletions in the Colorado River Basin, which are shown in Table 12, appear low. Projections of future Upper Basin

use made by the USBR indicate higher levels than shown in Table 12. The irrigated agricultural expansion on the Colorado River Indian Reservation is not shown.

Pages 53 and 54

The projections of future salinity presented in Table 13 and Figure 5 are low in comparison with projections developed for the Type I Framework Studies and by the Colorado River Board of California in its August 1970 salinity report.

Page 61

The first two sentences of the first paragraph indicate that water users in the Lower Basin have recently begun to recognize that degradation of Colorado River water is having an adverse effect on their economic welfare and that, although individual users have not felt the impact to a significant degree, there is a general awareness of the problem. These sentences are misleading. Large numbers of Lower Basin domestic, industrial, and irrigation users of the Colorado River have been keenly aware of the river's salinity on their economic welfare for a number of years.

Page 67

It is not clear how the quantity of applied water required for a crop at a given salinity can be obtained from the formula.

Page 70

The formula for leaching requirement is not as described in Handbook 60 published by the U. S. Department of Agriculture. The formula and its description need clarification.

Page 77

The discussion of the methods used to evaluate additional labor costs and fertilizer losses is not understandable and needs clarification.

The last paragraph states that drainage facilities were assessed no penalty costs because (1) irrigation districts build facilities as they are needed, (2) additional leaching water required because of water quality degradation can easily be carried by the existing closed systems. With regard to the first reason, irrigation districts must build facilities or expand existing facilities to accommodate additional leaching water. Reason (2) is incorrect in many cases.

Page 78

It should be mentioned that the yield-decrement method for irrigated agriculture gives minimum penalty costs. Large expenditures have been and are being made to expand and improve drainage systems in the Imperial and Coachella Valleys among other areas using Colorado River water.

Pages 78 and 80

Industrial penalty costs were evaluated for only cooling and boiler feed. Even though the report indicates that industrial penalty costs are somewhat understated, the report should acknowledge in general terms all other penalty costs not included in the industrial uses

Page 93

The effects of softening should mention two important factors:

a. When home regenerated softeners are used, only about one-half of the delivered water is softened. The remaining

one-half is used for irrigation of lawns, etc., and is not ordinarily softened.

b. Central softening by the Metropolitan Water District raises the sodium percentage to about 75 percent which removes about two-thirds of the hardness. Hardness is not reduced further because of (1) cost, (2) deleterious effects of high sodium water on existing chemical deposits in pipelines of many member agencies, and (3) deleterious effects of high sodium water for irrigation.

Pages 93 and 95

Penalty costs associated with municipal use of water in the Southern California water service area were calculated as being the costs associated with large central softening plants for the Metropolitan Water District service area and the City of Calexico. Soap wastage costs were used as penalty costs for the remaining areas of California. A number of reports prepared by private engineering firms and public agencies concerning the value of the quality of Colorado River water in Southern California are available and indicate that penalty costs developed in this report would be minimum values. When plumbing and appliance replacement costs, bottled water costs, household water softening costs, etc., are considered, penalty costs will be significantly greater than those projected by this report.

Pages 100, 103 and 104

It is realized that the assumptions in the report regarding quantities of water from the Colorado River and the State Water Project and their blending may have been reasonable several years ago when the report was in preparation. However, we now have better

knowledge of the limitations of existing distribution systems and estimated quantities of water planned for importation and use from available sources. The information on quality of water to be expected by blending is oversimplified and misleading. In addition, if timing for construction of the Peripheral Canal of the State Water Project is not adhered to for any reason, deliveries from that source could have significantly higher salinities than shown in your report after 1980. We therefore recommend that Figure 15 be removed from the report.

STATE OF CALIFORNIA—THE RESOURCES AGENCY

RONALD REAGAN, *Governor*

STATE WATER RESOURCES CONTROL BOARD

ROOM 1140, RESOURCES BUILDING
1416 NINTH STREET • SACRAMENTO 95814

Phone 445-3993

KERRY W. MULLIGAN, *Chairman*
E. F. DIBBLE, *Vice Chairman*
N. B. HUME, *Member*
RONALD B. ROBIE, *Member*
W. W. ADAMS, *Member*
JEROME B. GILBERT, *Executive Officer*

JUL 19 1971

Mr. Paul De Falco, Jr.
Regional Director
Water Quality Office, Region IX
Environmental Protection Agency
760 Market Street
San Francisco, California 94102

Dear Mr. De Falco:

This letter is in further response to your letter of April 5, 1971, regarding your agency's draft of the report "Mineral Quality Problem in the Colorado River Basin" dated November 1970. We should like to amend one statement made in our specific comments on items identified by reference to particular pages that was appended to our letter of June 4, 1971, regarding this subject.

Pages 9 and 10 of our specific comments referred to pages 100, 103, and 104 of Appendix B and recommended that Figure 15 be removed from that appendix. We should like to amend that statement by substituting the following discussion:

> The report discusses the blending of water from the State Water Project with that from the Colorado River. In order to make the discussion more current and accurate, we suggest inclusion of the following points. The Metropolitan Water District of Southern California has given this matter extensive consideration during the past year and is continuing to study the relationships involved. Because of the limitations of existing distribution systems and facilities now scheduled for construction during the period covered by the discussion on these pages, complete blending to the extent shown in the report will not be possible. In addition, reduction of imports of Colorado River water due to the effects of diversions by the Central Arizona Project will probably not occur as early as shown in the report. As a result, improvement of quality would be delayed somewhat. In addition, if timing for construction of the Peripheral Canal of the State Water Project is not adhered to for any reason, deliveries from that source could have significantly higher salinities than shown in the report after 1980.
>
> Even though Figure 15 and the analysis it depicts are not completely current and accurate, we believe that they are satisfactory for the purposes of the report and should be included.

Again, California expresses its appreciation for the opportunity of reviewing this report. We trust that this change in our original comments will be acceptable and will not unduly inconvenience you.

Sincerely,

Jerome B. Gilbert
Executive Officer

COLORADO

STATE OF COLORADO DEPARTMENT OF HEALTH
4210 EAST 11TH AVENUE · DENVER, COLORADO 80220 · PHONE 388-6111
R. L. CLEERE, M.D., M.P.H., DIRECTOR

June 2, 1971

Mr. Paul De Falco, Jr.
EPA WQO
760 Market Street
San Francisco, California 94102

Review of Preliminary Draft "The Mineral Quality Problem in the Colorado River Basin"; Summary Report, Appendices "A", "B", and "C"

There has been no attempt by this Division to evaluate the input data used in the preparation of this report. Lack of manpower and the time allotment imposed for comments have precluded an evaluation of all but the general recommendations and conclusions as presented in the Summary Report.

It is difficult to follow the various estimated costs for salinity control throughout this report. Nomenclature and terminology changes and different salinity levels tend to confuse and obscure the various estimated costs. If phased implementation as the minimum cost objective (with a target level of 800 mg/l at Hoover Dam) is to be the recommendation, then this alternative should be developed in a straight forward manner with total costs, benefits, detriments, and methods of implementing controls clearly stated.

Page 6 of the Summary Report states: "A basinwide salt load reduction program designed to minimize total salinity costs (detriments plus control costs) would have an estimated average annual cost of $7 million in 1980 and $13 million in 2010 (1970 dollars)." This is in general agreement with total salinity management costs from Table 9, Summary Report, page 53; however, total annual salinity management costs in Table 9 indicate only $5.9 million in 1980 and $10.8 million in 2010 as the cost of irrigation improvements. This does not appear to be compatible with Table 8, Summary Report, page 42, which estimates average annual total project costs of $46.7 million and average annual salinity control costs of $34.8 million. Estimated costs in Table 8 are apparently based on 700 mg/l at Hoover Dam rather than 800 mg/l.

Implementing the first 13 projects in Table 8 as the phased implementation alternative for salinity control, would have average annual costs of $12.7 million with $10.8 being for irrigation improvement. This agrees with the estimated average annual cost in 2010 for irrigation improvements in Table 9. However, the text in Appendix C indicates the implementation of these 13

projects by 1980 (Appendix C p.v-14 and v-24). This raises the question of the estimated annual irrigation improvements cost in 1980, is it to be $5.9 or $10.8?

Table 9, page 53, Summary Report, is also misleading in the fact that for irrigation improvements only one half the project costs are listed for salinity control costs. Total local investment cost per year to achieve the control desired would be $13.1 million in 1980 and $23.5 million in 2010 instead of $7.2 million and $12.7 million as listed. Even though the differences are for benefits other than salinity control, the total project costs should be incorporated into Table 9 to give a true picture of the expenditures necessary to accomplish the recommendations. Table 9 also would give the impression that local investment costs are only one half the irrigation improvement costs whereas all the irrigation improvement costs are to be local investment and comprise 82 percent (1980) and 85 percent (2010) of the total salinity management costs. It is recommended that Table 9 be omitted from the report and be replaced with a similar Table which lists T.D.S. objective,total irrigation project costs, and indicate that all salinity management costs for irrigation improvements are by local investment.

In the comparison of alternative salinity control programs (Summary Report page 41) there is no alternative developed for phased implementation with salinity concentration of 800 mg/l at Hoover Dam as the objective. If this is to be the recommendation (S.R. page 7) then this alternative should be developed. Incidentally, the estimates in Table 7 do not appear to agree with estimates in Table 9 for a constant salinity level of 700 mg/l. What is the difference between "Average Annual Program Cost" (Table 7) and "Total Salinity Management Costs" per year (Table 9)? The average annual program costs as developed in Table 7 are much higher than the total annual salinity management costs as estimated in Table 9. In fact, the average annual program costs for all but two of the alternatives developed in Table 7 exceed the total economic detriments with no salinity controls and unlimited development.

Item 8 on page 5 of the Summary Report states: "More than 80 percent of the total future economic detriments caused by salinity will be incurred by irrigated agriculture located in the Lower Basin and the Southern California service area.." It would follow then that more than 80 percent of the benefits of a salinity management program will accrue to these same areas. These benefits are stated to be $11 million in 1980 and $22 million in 2010 (S.R. p.6). The phased implementation program requires the construction of the first 13 projects in Table 8 (S.R. p. 43) all of which are located in the Upper Basin. Average annual local investment costs for salinity control to the Upper Basin States then would be $5.9 million in 1980 and $10.8 million in 2010 (Table 9.) Salinity control benefits to the Upper Basin States would be $2.2 million in 1980 and $4.4 million in 2010 (20 percent of benefits). In all probability, cost to benefit ratios such as these will be received somewhat less than enthusiastic by the Upper Basin States.

Page 55 of the Summary Report concludes that salinity concentrations increase substantially between Hoover Dam and Imperial Dam due to water use in the Lower Basin and exports to Southern California. Implementation of salinity control measures in the Lower Colorado River could effect or minimize the salinity increases below Hoover Dam; however, since the unit costs were higher than for the minimum cost program, these measures were omitted from consideration. The cost index for the minimum cost objective program range from $3.89 per ton to $32.00 per ton of salt removed (Table 8 p. 43). It would be interesting to know the cost index for control projects below Hoover Dam. It could be that implementation of salinity control measures in the Lower Basin would result in a more equitable cost distribution than the minimum cost objective as recommended. The report further states on page 55 that: "Salinity control below Hoover Dam,however, is a possible, practical approach toward minimizing the economic impact of salinity and should receive further consideration in the formulation of a basinwide salinity control program." Investigation and consideration of these measures should be made before adoption of final recommendations by the conferees.

"Existing legal and institutional arrangements are not adequate to provide the basis for implementing a largescale salinity control program." (S.R. p.60) "Detailed evaluation of existing legal and institutional constraints which may affect the basinwide salinity control program should be conducted." (S.R. p.64) These statements reflect the crux of a basin wide salinity control program and raise some interesting questions. If a salt load reduction program removed 172,000 acre feet of water above Hoover Dam (S.R. p.42) would this water have to be replaced by the Upper Basin States to meet requirements of the Colorado River Compact? If irrigation improvements reduced consumptive use by 299,000 acre feet annually in the Upper Basin, would this flow be available for flow augmentation or could this flow be captured and used by owners of downstream water rights? A determination of the modifications needed in existing legal and institutional constraints and means to accomplish these modifications should be made prior to an attempt to implement salinity controls. We reject the recommendation on page 60 that congressional authorization be sought at an early date so that implementation of the salinity control program can proceed. Attempting to modify existing legal constraints by congressional action may not be politically expedient and could jeopardize any and all salinity control programs.

A broad water quality objective to minimize the future economic impact of salinity in the Colorado River Basin is desirable and should be adopted by the conferees. A statement endorsing this objective should be qualitative rather than quantitative however. Until such time as the research and demonstration projects have actually demonstrated the practical methods of salinity control, the adoption of interim numerical standards would serve no useful purpose at this time.

We agree with the statement in the first paragraph on page 57 of the Summary Report which states: "Although additional information will be required before it will be possible to establish detailed basinwide criteria which are equitable, workable, and enforceable", we disagree with the remainder of the statement, "present information is considered adequate to form the basis for the establishment of interim salinity standards which will set an upper limit on salinity increases in the Lower Colorado River".

The adoption of interim numerical criteria by the Upper Basin States that for any given month the average concentrations of total dissolved solids be maintained below 800 mg/l at Hoover Dam and 1000 mg/l at Imperial Dam would require the Upper Basin States to adopt water quality standards and stream classifications limiting salinity concentration considerably below the present levels. Since much of the salt load and concentrating effects are from irrigation return flow and other diffuse sources the surveillance and monitoring of these salt sources would be extremely difficult and enforcement next to impossible under existing legal constraints. The adoption by the States of interim numerical standards which are impossible to enforce will in no way contribute to the solution of the water quality problem of the Colorado River Basin. In Colorado a special classification for the Colorado River and its tributaries would be necessary as the salinity concentration in the Colorado River is much less than the salinity concentration of the South Platte and Arkansas Rivers. Although this would be possible, the implementation of a double set of standards for the same use would probably result in extreme criticism and possible legal action by the local interest affected.

For the present we would favor the continuation of the present Task Group to develop policy and plan a basinwide salinity control program. As mentioned in the Summary Report no new legislation would be required for this approach. The creation of a State/Federal River Basin Commission with arbitary authority over all activities necessary for basinwide management and control of salinity is not favored at this time. We would need to know much more about the method of funding and details of the plan of implementation before abrogating the powers and duties of the Colorado Water Pollution Control Commission in the Western half of the State.

Thank you for the opportunity to review and comment on this preliminary report.

FOR DIRECTOR, WATER POLLUTION CONTROL DIVISION

Kenneth W. Webb, P.E.
Public Health Engineer

KWW:mgc

BENJAMIN F. STAPLETON
Chairman, Denver
FREDERICK V. KROEGER
Vice-Chairman, Durango
H. G. BERTHELSON
Rio Blanco
CLARENCE E. BURR
Walden
QUINCY C. CORNELIUS
Hooper
LEE E. FORD
Montrose
HUGH E. PICKREL
Rocky Ford
HERBERT H. VANDEMOER
Sterling
RICHARD B. WILLIAMS
Grand Junction

JOHN A. LOVE
Governor

DEPARTMENT OF NATURAL RESOURCES

COLORADO WATER CONSERVATION BOARD

102 COLUMBINE BUILDING 1845 SHERMAN STREET
DENVER, COLORADO 80203

FELIX L. SPARKS
Director
LAREN D. MORRILL
Deputy Director

Telephone
892-3441

May 28, 1971

RECEIVED
JUN 1 - 1971
WATER POLLUTION
CONTROL DIVISION

Mr. Frank Rozich, Director
Water Pollution Control Division
Colorado Department of Public Health
4210 East 11th Avenue
Denver, Colorado 80220

Dear Frank:

Enclosed are the comments of the Colorado Water Conservation Board in the Summary Report of The Mineral Quality Problem In The Colorado River Basin dated November, 1970. As you know this Summary Report was issued by the Federal Water Quality Administration and they are asking that all Colorado comments be channeled through you as the Colorado conferee. They are also asking for the comments by June 7, 1971.

I have reviewed the draft of the prepared comments of your office and it appears that we are both thinking along the same lines.

Sincerely,

L. D. Morrill
Deputy Director

LDM/ac

Enc.

The Mineral Quality Problem In The
Colorado River Basin Dated November 1970
Federal Water Quality Administration

General Comments:

The use of the 1942-1961 period of hydrologic record for estimating average salinity conditions for future years makes projected values too high. For example, present concentrations below Hoover Dam are about 725 mg/l, but projection shown for 1970 is 760 mg/l. The report should be updated using a more typical period of record. A report that is ten years out of date and that uses a period of record that is not average is of questionable value.

While the report states that it does not recommend curtailment of future water resources development as a means of salinity control, it mentions this possibility in several places. The state of Colorado completely rejects this concept of restricting development in the upper basin for the benefit of the lower basin California and Mexico simply because they developed or are developing their water resources ahead of the upper basin. One of the primary reasons for the Colorado River Compact was to insure that the upper basin states would have water for this future development even though they didn't use their full allocation for many years.

Since the major benefits of any major salinity control measures would accrue to water uses in the lower basin, California and Mexico the costs should not be borne by the upper basin. It is recommended that since it would be extremely difficult to apportion the costs in an equitable manner, and still more difficult to collect the money from the beneficiaries in accordance with the benefits received, that such control measures be a federal cost. This would be similar to the present flood control projects of the Corps of Engineers.

It would also seem unrealistic and quite futile to establish salinity standards until a salinity control program complete with a practical method of financing such a program has been established.

Specific Comments

Page	Paragraph	
4	3	As previously stated, the 1942-1961 period is not typical and projection and conclusions based on the use of this period are misleading. Delete reference to limiting to development of water resources as a means of salinity control.
4 & 5	4	This paragraph is highly conjectural and argumentive and adds little to the value of the report. It should be deleted.
5	5	The 1960 data should be updated to 1970.
5	6	The first sentence of this paragraph may not be accurate.
5	7	This paragraph may be based on questionable assumptions. Apparently no consideration is given to offsetting benefits due to water development. The last part of the paragraph again dwells on limiting future water resource development and should be deleted.
6	C	This paragraph again dwells on limiting water resource development and should be deleted. Would recommend concentrating on the concept as expressed in paragraph a and b.
6	11	The fourth and part of the fifth line are repetitive and should be eliminated.
7	1	This may not be possible to achieve. A realistic program should be set up ahead of such recommendations.
7	2	Same comment as for paragraph 1
7	3	Same comment as for paragraph 1
7	5	Shouldn't be in too much of a hurry to implement a basin-wide salt load reduction program. A comprehensive and realistic approach to this problem is needed.
11	2	The accuracy of the last sentence of this paragraph should be checked.
12	1	The apportionment mentioned in the last two sentences was by the supreme court, not by the Upper Basin Compact.
13	1	The third from the last sentence states that "No comprehensive evaluation of present or future mineral quality had been made." What about USGS Professional Paper 441 from which much of the data on salt loads was obtained?

Specific Comments

Page	Paragraph	
14 & 15	1	This table should be adjusted to 1970 conditions and should use a more typical period of record.
17	2	In table 2 a figure of 5,760 is shown under the salt load leading. This figure is 5,408 in table 1, page 14.
18	3	In the third from last line, the word by should be changed to be.
		In figure 2 following page 18, date should be revised to reflect a modification to 1970 conditions.
20	1 & 2	Reference to limited development conditions in these paragraphs and table 3 should be deleted.
23	1	Who determines the threshold limits and how authentic are they? Also, the salinity of the Salton Sea will continue to increase even with present water quality because of salt concentration by evaporation. What is the marine fishery worth?
28		The values in table 5 should be converted to 1970 dollars.
29		The statement at the top of the page says "It was assumed that all Central Arizona Project water would be used for agricultural purposes." This assumption is erroneous.
		Figure 4 following page 29 doesn't state what dollars were used. 1960?
33	B-2	It is questionable that treatment or disposal of return flows from irrigation to cut down salinity is physically or economically practical.
39	2	This paragraph makes the statement that limiting water resource development that is expected to produce an increase in salt loads or streamflow depletions has the disadvantage of possibly stagnating growth of the regional economy. This is a gross understatement. Any development that uses water causes stream depletion and many contribute additional salinity. Since practically all resource developments use water, such an approach would stop further economic development.
41		What year dollars were used in table 7?
42	3	Is there any good backup basis for the assumption that only half the costs of irrigation improvement were allocated to salinity control? It might be nearer 75% to 80%.
		What year dollars used in table 8 following page 42?

Specific Comments

Page	Paragraph	
		What year dollars used in figures 6 and 7 following page 45?
		What year dollars in figures 8 and 9 following page 49?
		What year dollars in table 9 following page 53?
56	2	This paragraph states "the feasibility of maintaining salinity concentrations at a below present levels in the Colorado River below Hoover Dam has been shown." This is not true. Nowhere has it been shown that anybody is willing to pay for this. Requiring salinity concentrations to be maintained at or below present levels in the Lower Colorado River would be an exercise in futility without a practical method of financing such a requirement.
56 & 57		Setting salinity standards is futile without some economically and politically practical method of achieving these standards.

NEVADA

JUN 7 RECD

STATE OF NEVADA
DEPARTMENT OF HEALTH, WELFARE, AND REHABILITATION
DIVISION OF HEALTH
CARSON CITY, NEVADA 89701

June 4, 1971

Environmental Protection Agency
Region IX
760 Market Street
San Francisco, California 94102

Attn: R. L. O'Connell
Acting Interim Regional Coordinator

Dear Mr. O'Connell:

Concerned State agencies have reviewed the draft report of the Mineral Quality Problems in the Colorado River Basin dated November, 1970, and have the following comments:

There are several technical errors in the report which are apparently in part a result of the length of time involved in preparation of the report. The errors in quantity, and salinity determinations as well as in the cost estimates will require considerable revisions but do not have significant impact on the findings and recommendations in the report. These errors can be more specifically spoken to if the Environmental Protection Agency determines to rewrite the report before reconvening the enforcement conference.

We concur with the findings that a basinwide salt load reduction program at present appears to be the most feasible approach for maintaining salinity concentrations at acceptable levels but cannot agree with all the recommendations for implementing the program.

We concur with Recommendation 1 for adoption of a broad policy objective for the entire basin to maintain salinity concentrations at or below present levels in the lower Colorado and with Recommendation 5 that measures be taken immediately to obtain authorization and funding to implement the policy objective.

We do not agree that total dissolved solids numerical standards should be adopted at this time as suggested in Recommendation 2. Until there is assurance authorization and funding will be available to implement a control plan this would appear to be an exercise in futility. The broad policy objective can be oriented towards specific quality to provide interim goals.

We do not agree to the establishment of a federal/state task group for development of additional salinity control criteria at key points as suggested in Recommendation 3. Such additional criteria in keeping with the broad policy objectives could be more readily established by the individual states and appropriate federal agencies.

We do not agree with Recommendation 4 which suggests establishing a state/federal or river basin commission to plan, formulate policy, direct and implement a basinwide salinity program. Formulation of policy and direction should be the joint responsibility of the concerned state and federal agencies. Implementation could appropriately be extended to an existing agency such as the Bureau of Reclamation which has a competency in program development, design and construction. River basin or regional planning in various programs as is being required under federal law and regulations must consider all elements such as water pollution control, water resources and use, fish and wildlife, recreation, land use and management, watershed management, population concentration, transportation habits and pattern, etc., if comprehensive plans are to be developed for any single element. To isolate a portion of an element, such as salt loading in water pollution, with disregard for its relationship to the total water pollution problem and in turn this relationship to the other essential elements will only add to the confusion and duplication existing in all levels of government in planning efforts. State and local agencies engaged in planning activities must have an input into program policy for all elements if planning is to be effectively implemented. The Colorado River Basin states must assist in establishing basin-wide salinity control program policy as affects their areas of concern and kept informed on all aspects of program development to relate this program to their other planning elements.

We appreciate the opportunity to comment and will await your decision as to whether or not the report is to be rewritten before the conference is reconvened.

Sincerely,

E. G. Gregory, Chief
Bureau of Environmental Health

EGG:ve

cc: Roland Westergard
Don Paff

NEW MEXICO

DATE 7-13-71
FILE

STATE OF NEW MEXICO

HEALTH and SOCIAL SERVICES department

ENVIRONMENTAL IMPROVEMENT AGENCY
P. O. BOX 2348. SANTA FE. NEW MEXICO 87501
Phone No. 827-2373

July 6, 1971

Mr. Paul De Falco, Jr., Director
Environmental Protection Agency
Water Quality Office
760 Market Street
San Francisco, California 94102

Re: Comments on Mineral Quality Problem in the Colorado River Basin Summary Report - Preliminary Draft Dated November, 1970 - Prepared by Colorado River Basin Water Quality Control Project

Dear Mr. De Falco:

You transmitted the above referenced reports to this office for review in April, 1971, and requested that comments be submitted no later than May 3, 1971. This time frame was an impossible one for our Department to comply with, and your office graciously approved an extension of time for us to reply. The scope and complexity of the problem, and the manpower available to review and comment on the documents, made it impossible to comment until now.

I wish to thank the people associated with the Colorado River Basin Quality Control Project for their efforts in developing these comprehensive reports and, as you are well aware, it would have been impossible for the individual states to undertake such a complex study.

I would like to discuss the recommendations which were outlined on page 7 of the Summary Report.

1. "A broad policy objective to be adopted for the entire Colorado River System which would result in salinity concentrations being maintained at or below levels presently found in the Lower Colorado River."

Recommendation #1 appears to be a good basic policy for the control of salinity in the Colorado. However, one basic problem with the broad objective is that it does not take into consideration the rights to water development under existing water laws. For that reason, I would suggest that the recommendation be amended to read:

> A broad policy objective to be adopted for the entire Colorado River System which would result in salinity concentrations being maintained at or below levels presently found in the Colorado River <u>without limiting or altering any state's right to water development under the existing water laws.</u>

Emphasis added to portion requested for addition to the recommendation.

2. "Criteria for salinity concentrations to be adopted by appropriate Colorado River Basin States in accordance with the Federal Water Pollution Control Act, as amended.

   As a minimum, these criteria should require that for any given month the average concentrations of total dissolved solids be maintained below 800 mg/l at Hoover Dam and 1000 mg/l at Imperial Dam."

The first portion of this recommendation was discussed by the Conferees' Resolution of November 15, 1967. At that time, the Conferees did not believe it appropriate to develop a numerical standard and specifically stated "that the Conferees do not believe it is appropriate that a standard of 1000 mg/l or any other definite number for TDS at Imperial Dam be set by the Basin States or the Secretary of the Interior at this time." The Conferees further urged the completion of water quality reports and urged FWPCA to consider approval of water quality criteria standards of the seven Colorado River Basin States contingent upon ultimate establishment of acceptable numberical salinity standards. The development of these reports, among other things, was intended to provide basin states with information needed for the development of numerical water quality standards. There is not sufficient information in the report to permit the development, at this time, of numerical standards as recommended in Recommendation #2. For this reason, I would like to recommend that Recommendation #2 be rewritten to read:

> Criteria for salinity in the Colorado River be retained as now adopted. When sufficient salinity control projects are in operation and have been evaluated, and other necessary information is available, salinity criteria could then be adopted. The criteria should provide under full development of the water and completion of salt load reduction programs that for any given year the average concentrations of total dissolved solids be maintained at or below present levels.

3. "A State/Federal Task Group immediately be established to develop additional salinity control criteria at key points throughout the Basin which will accomplish the objective of Recommendation #1. These criteria should be adopted on or

before January 1, 1973, by the appropriate Colorado River Basin States in accordance with the Federal Water Pollution Control Act, as amended."

This recommendation appears to be superfluous because there presently exists a State/Federal Task Group. The group is the Office of Water Quality, in cooperation with the Conferees. Only with the information in this report, evaluation of completed salinity control projects, evaluation of completed development projects, and with additional studies will it be possible to establish meaningful salinity objectives at key points throughout the Basin. It would be impossible to complete such an undertaking by January 1, 1973. For these reasons, I would respectfully recommend that the following new language be substituted for Recommendation #3:

The State/Federal Task Group presently established, consisting of the Office of Water Quality and the Colorado River Basin Conferees, should work toward the establishment of salinity objectives at key points throughout the Basin.

4. "The possibility be explored of extending the authority of one or more existing agencies to assume the responsibility to plan, formulate policy, direct, and implement a comprehensive basinwide salinity control program. In the event existing authority is lacking or inappropriate, legislation should be sought to establish a permanent Federal/State agency or River Basin Commission which could assume such responsibility."

Recommendation #4 has far-reaching implications and could be construed as recommending interstate compacts on quality. It is realized that a State/Federal agency or River Basin Commission could be assigned such responsibilities as presently being handled by such interstate agencies as ORSANCO. This recommendation, however, if implemented, could have the effect of establishing a new agency and could require the development of a compact on salinity. The establishment of any such compacts or agreements would be, in effect, amending the present water laws. The present water law, in apportioning water for consumptive use has, in effect, already committed the States to that quality of water which will be realized as a result of beneficial consumptive use of the waters allocated to the individual states. For these reasons, I suggest that Recommendation #4 be deleted.

5. "Early measures be sought to authorize, fund, and implement a basinwide salt load reduction program that would lead to achieving Recommendation #1."

Recommendation #5 should definitely be included in the report and actively supported by the Water Quality Office and the Basin States. I particularly support Recommendation #5 in order that salinity control measures can be implemented at the earliest possible time to maintain the water quality of the Colorado River in the best condition possible.

I would like to make some additional editorial comments on the proposed draft of the Summary Report:

Page 4, paragraph numbered 2, under Chapter 2, Summary of Findings and Recommendations: It is noted that out-of-basin export is included with the salt concentrating effect consideration. I believe that the full ramifications of out-of-basin export should be discussed in paragraph 2. The full ramifications of out-of-basin export are explained in detail in other areas of the report. However, for someone reading only the Summary, the wrong inference could be drawn.

Page 6, paragraph C, discusses the unreasonable, unlawful, and totally unacceptable concept of curtailment of future water resources development in order to achieve salinity control. Paragraph 10 on page 6 further mentions that partial implementation of the other two alternatives (one of which would be curtailment of uses) would increase the effectiveness of the salt load reduction program. I cannot support the limitation of further development of water allocated New Mexico under present water law.

The Secretary of the Interior in a letter dated February 2, 1968, stated that "After consideration of all the factors involved, I have decided that salinity standards should not be established until such time as we have sufficient information to be reasonably certain that such standards will be equitable, workable, and enforceable. Arriving at this decision at this time does not and will not preclude initiating of programs to study and demonstrate the feasibility of controlling and alleviating the Basin's salinity problem."

In a letter dated February 12, the Assistant Secretary for Water Pollution Control, made the following statement: "It is the intention of the Secretary that the Department of the Interior and States pursue active programs to lay the foundation for setting numerical criteria at some future time. These programs should focus on devising and demonstrating salinity control measures and finding ways to revise the legal and institutional constraints that could impede the implementation and enforcement of salinity standards."

It is unfortunate, but a fact of life, that information is not available in sufficient detail and scope to permit the development of salinity standards at this time. I recognize the need for and endorse a program of salt reduction

projects and believe they should be considered in the total scheme of river development. I also believe we should be striving for a river quality objective which permits beneficial use of the river for generations to come. It must be perfectly clear when developing objectives that nothing be included that will preclude any state from her rightful share of Colorado River water under present water law. For these reasons, I recommend that criteria for dissolved ionic constituents be framed as objectives to be achieved.

I recommend that the project be continued with the specific understanding that working in cooperation with the Basin States and other Federal agencies, the project will develop information for establishing objectives at strategic points throughout the Basin.

In summary, I recommend that feasibility studies of salinity control programs be undertaken at the earliest possible time and the project be continued whereby objectives can be developed as guides and framework for establishment of criteria that will be equitable, workable, and enforceable. Until such time as criteria can be set, the objectives can be used for Basin planning and the basis for decisions in developing salinity control projects and ancillary State standards and regulations.

Please note the change of address and be advised that there has been a change in agency responsibility. As of July 1, 1971, this office will be the Water Quality Section of the Environmental Improvement Agency.

Transmitted herewith are comments prepared by the New Mexico Interstate Stream Commission. This office is in basic agreement with the Interstate Stream Commission's position. However, I recommend that the project be continued with the responsibility to develop tributary by tributary objectives to be used as guides and framework for the Basin States' consideration when ultimately developing criteria.

Yours truly,

John R. Wright

JRW:fl

John R. Wright, P.E., Chief
Water Quality Section Conferee

cc: Director
Water Pollution Control Division
Arizona State Dept. of Health
Division of Environmental Health
Hayden Plaza West
4019 N. 33rd Avenue
Phoenix, Arizona 85017

Chairman
Water Resources Control Board
Room 1140, Resources Building
1416 Ninth Street
Sacramento, California 95814

Technical Secretary
Water Pollution Control Commission
Colorado State Dept. of Public Health
4210 E. 11th Avenue
Denver, Colorado 80220

Director
Bureau of Environmental Health
State Department of Health
Carson City, Nevada 89701

Executive Secretary, Water Pollution Committee
Utah Water Pollution Control Board
44 Medical Drive
Salt Lake City, Utah 84113

Director, Environmental Sanitation
Wyoming Health Dept.
State Office Building
Cheyenne, Wyoming 82001

Commissioner, International Boundary & Water Commission
U.S. Section - P.O. Box 1859, El Paso, Texas 79950

Director, Region 3
Bureau of Reclamation
P.O. Box 427
Boulder City, Nevada 89005

Director, Region 4
Bureau of Reclamation
P.O. Box 11568
Salt Lake City, Utah 84114

Environmental Protection Agency
Water Quality Office
Colorado River/Bonneville Basins
Office
Denver Federal Center
Building 22, Room 415
Denver, Colorado 80225

Executive Director
Upper Colorado River Commission
355 South Fourth East Street
Salt Lake City, Utah 84111

NEW MEXICO INTERSTATE STREAM COMMISSION

BATAAN MEMORIAL BUILDING
STATE CAPITOL
SANTA FE, NEW MEXICO 87501

COMMISSIONERS

I. J. COURY, Chairman, Farmington
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WALTER BAMERT, Las Cruces
EDWARD J. APODACA, Albuquerque
RICHARD P. COOK, Espanola

LEGAL ADVISER

CLAUD S. MANN, Albuquerque
Charles M. Tansey
Farmington

June 24, 1971

Mr. John Wright, Chief
Water & Liquid Waste Section
Health & Social Services Department
PERA Building
Santa Fe, New Mexico

Dear Mr. Wright:

By letter dated April 5, 1971, Mr. Paul DeFalco, Jr., Director of the Water Quality Office of Region IX of the Environmental Protection Agency transmitted to the New Mexico Interstate Stream Commission a copy of a draft report on "The Mineral Quality Problem in the Colorado River Basin". He requested that the Commission furnish its comments on the report through you by May 3, 1971. By letter dated April 19, you requested that the time allowed for the state to furnish its comments be extended to July 1, 1971. The time allowed was extended to June 7 and on about that date you advised Mr. DeFalco by telephone that an additional 10 to 20 days would be required for the state to complete its review and comment on the report.

The comments of the Interstate Stream Commission are set out below. It is requested that you furnish a copy of this letter to Mr. DeFalco.

Each of the five "RECOMMENDATIONS" set forth at page 7 of the report is quoted below and followed by a discussion of the recommendation.

1. A broad policy objective be adopted for the entire Colorado River System which would result in salinity concentrations being maintained at or below levels presently found in the lower Colorado River.

It is suggested that this recommendation be made a part of Recommendation 5 and modified as will be discussed below.

> 2. Criteria for salinity concentrations be adopted by appropriate Colorado River Basin States in accordance with the Federal Water Pollution Control Act, as amended. As a minimum, these criteria should require that for any given month the average concentrations of total dissolved solids be maintained below 800 mg/l at Hoover Dam and 1,000 mg/l at Imperial Dam.

The Interstate Stream Commission does not concur in this recommendation and urges that it be deleted.

While the data given in the report do not so indicate, a review of the records reveals that the monthly average criterion of 1,000 mg/l at Imperial Dam as proposed was equaled in January of 1957 and has been closely approached a number of times in recent years. The monthly average criterion of 800 mg/l proposed for the Colorado River below Hoover Dam has been equaled or exceeded on many occasions, including some occurring in recent years.

Since virtually any beneficial consumptive use of water causes some increase in the concentration of dissolved solids in the remaining supply, the adoption of the proposed criteria would have the effect of precluding any new use of water above Hoover Dam, as well as some uses recently initiated. Some proposed new uses below Hoover Dam also would be precluded.

On January 30, 1968, then Secretary of the Interior Stuart Udall made the following remarks in a statement to the House Subcommittee on Irrigation and Reclamation (House Document 90-5, Colorado River Basin Project, Part II, pp. 705-706):

> "The Colorado River is the only major river of the world that is virtually completely controlled. With

the existing system of large storage reservoirs it is possible to plan, for all practical purposes, on complete utilization of the river's runoff with no utilizable water escaping to the sea. This means that the limited water supply in the Colorado River Basin must be used and reused and then used again for a wide variety of purposes. In this complete utilization of runoff, the Colorado Basin is unique.

The River is unique also with respect to the number and extent of the institutional constraints on the division and use of the Basin's water which include an international treaty, two interstate water compacts, Supreme Court decisions, Indian water rights, State water laws, and Federal law.

These two aspects, in turn, make the problem of setting numerical mineral quality standards for the Colorado River not only unique but extremely complicated. Before discussing this problem further, I would like to state that salinity standards will not be established until we have sufficient information to assure that such standards will be equitable, workable, and enforceable.

The principal water uses in the Basin include irrigated agriculture, municipal and industrial water supply, fish and aquatic life, and recreation. Salinity in the Colorado River has no significant effect on instream or nonconsumptive water uses such as hydroelectric power generation and water-oriented recreation. However, ever-increasing levels of salinity do have an adverse impact on the consumptive uses of water for both irrigated agriculture and municipal and industrial water supply.

Further development and depletion of water allocated to the Upper Basin States will raise the salinity of water downstream.

Salinity standards must be so framed that they will not impede the growing economy of the Colorado River Basin and yet not permit unwarranted degradation of

> water quality. This is the hard dilemma which is the core of the problem of establishing equitable salinity standards.
>
> A decision not to set salinity standards at this time does not and will not preclude getting started with programs to study and demonstrate the feasibility of controlling and alleviating the Basin's salinity problem...."

The adoption of the recommendation would be thoroughly inconsistent with the statement quoted.

The Colorado River compacts apportion among the seven states of the river basin the beneficial concumptive use of the waters of the Colorado River system. "Beneficial consumptive use" is defined as the amount of water diverted from the stream less the return flow thereto. This is a fair paraphrase of the definition used by the United States Supreme Court in its decision in Arizona v. California, et al.

When water is diverted from a stream for irrigation, for example, a part of the water is evaporated or taken up in the plants and the remainder returns to the stream. About two-thirds of the water applied to the land for the irrigation of crops is consumed by evaporation and moves off on the wind; the balance returns to the stream. That part of the water diverted that is consumed, or evaporated, is pure H_2O and that part which returns to the stream carries all of the dissolved minerals, or salinity, that was in the water diverted. This aspect of irrigation is also true for most other consumptive uses of water in the Basin. Some uses, particularly new irrigation projects and municipal use will necessarily, under any reasonable practice, return to the stream a tonnage of salt somewhat greater than the amount diverted. However, as the report reflects the preponderance of the projected increase in concentration of salts will result from the concentrating effect rather than from such additions of salt.

Thus, an inescapable consequence of the beneficial consumptive use of water is the degradation of water quality by an increase

in the concentration of dissolved solids in the remaining water. Even though the tonnage of dissolved solids remains the same, the amount of water in which it is carried is less and the concentration is increased.

This simple principle of physics was as well known in 1922, when it was agreed to apportion 7½ million acre-feet of beneficial consumptive use to the Upper Basin, as it is today. Therefore, the Compact must be construed to contain an agreement that less water containing a greater concentration of dissolved solids will flow to the Lower Basin as the Upper Basin develops and uses the amount of water that it is entitled to.

The Colorado River Compact specifically provides for transmountain diversion of waters of the Colorado River System to which the state making such a diversion is entitled. Diversion of the relatively fresh headwaters of a stream to another basin will, of course, increase the concentration of dissolved solids in the supply remaining in the basin. This increase in concentration will not be as great as the increase that would result from the consumptive use of an equal amount within the basin.

Adoption and enforcement of the criteria proposed would preclude operation of the San Juan-Chama transmountain diversion project which will divert 110,000 acre-feet annually from the headwaters of the San Juan River into the Rio Grande Basin. The federal government has invested $57 million in the San Juan-Chama project to date; the project was put in operation this spring.

Operation of the 110,000 acre Navajo Indian Irrigation Project would also be precluded. The federal government has thus far invested $38 million in the construction of this project.

The principal function of the Navajo Dam and Reservoir Project is to store water for the Navajo Indian Irrigation Project and for municipal and industrial use. Operation of this project, which was completed in 1963 at a cost of $41.6 million, for those purposes would be precluded.

Construction of the Animas-La Plata Project in Colorado and New Mexico to furnish water for irrigation, municipal, industrial and recreation purposes was authorized in 1968. Operation of that project likewise would be precluded.

If the proposed criteria are adopted and enforced, New Mexico will be unable to make beneficial consumptive use of at least 500,000 acre-feet of the estimated 770,000 acre-feet that the state is entitled to under the Colorado River compacts. Similar, possibly even more severe effects, would be brought about in other states.

It might be argued that new uses of water such as those outlined above would be precluded only until the salinity control projects described in the report can be implemented. The feasibility, effectiveness and timing of those projects is, and may remain for some time, uncertain. It is not reasonable to propose that the upstream states terminate recently initiated water uses and defer activity for the development of new uses until salinity control projects such as those outlined in the report can be put into operation.

The report recognizes (page 48, second paragraph) that to maintain the concentration of dissolved solids in the Colorado River at present levels by limiting development in the Upper Basin would not be economic.

The adoption and enforcement of the proposed salinity criteria would effectively limit Upper Basin development and would be not only uneconomic, but also unrealistic and inequitable.

3. A State/Federal task group immediately be established to develop additional salinity control criteria at key points throughout the Basin which will accomplish the objectives of Recommendation 1. These criteria should be adopted on or before January 1, 1973 by the appropriate Colorado River Basin States in accordance with the Federal Water Pollution Control Act, as amended.

This recommendation should be deleted for the reasons set out in the discussion of Recommendation 2.

4. The possibility be explored of extending the authority of one or more existing agencies to assume the responsibility to plan, formulate policy, direct, and implement a comprehensive basinwide salinity control program. In the event existing authority is lacking or inappropriate, legislation should be sought to establish a permanent State/Federal agency or river basin commission which could assume such responsibility.

No extension of the authority of existing agencies or creation of new agencies or commissions is needed to "implement a comprehensive basinwide salinity control program". The U. S. Bureau of Reclamation's record of experience and achievement in the development and management of the Colorado River makes it the logical agency to assume the primary role in the program. The Bureau of Reclamation has been studying the salinity of the Colorado River under Congressional directive for a number of years.

Each of the states of the Colorado River Basin has recently urged committees of the Congress to appropriate money to the Bureau of Reclamation to carry out feasibility investigations of salinity control projects on the Colorado River.

Consultation and guidance from the Environmental Protection Agency should be valuable to the Bureau of Reclamation in its studies.

Recommendation 4 should be revised to support appropriations to the Bureau of Reclamation for feasibility investigations of salinity control projects.

5. Early measures be sought to authorize, fund and implement a basinwide salt load reduction program that would lead to achieving Recommendation 1.

The Interstate Stream Commission supports this recommendation and suggests that the necessary first step is the appropriation of funds to the Bureau of Reclamation for feasibility investigations. It is recommended that the Environmental Protection Agency contribute to the program by accelerating its ongoing

research efforts and initiating new research projects that might contribute to conceiving or evaluating salinity control projects.

In consideration of the extensive federal land ownership and numerous federal water projects in the Basin, the international character of the Colorado River, the fact that salinity is a basinwide problem and the fact that salinity control beneficiaries will be very difficult to identify, it is recommended that the economic analyses of the feasibility investigations treat the construction, operation and maintenance cost of salinity control projects as an all-federal expense.

A number of the salinity control projects identified in the report, and other such projects that may be identified, will cause a depletion of streamflow. These depletions will occur in upstream states while the bulk of the benefits from the reduction in salinity will be realized in downstream states. This circumstance, because of the scarcity of water in the Colorado River System, will give rise to institutional problems. Such institutional problems are not seen as insurmountable and will be more readily resolved when all of the facts concerning a particular salinity alleviation project are available in the form of a feasibility report.

The thought of Recommendation 1 might better be made a part of Recommendation 5 with language added to recognize that it is almost inevitable that the concentration of dissolved solids in the Colorado River will increase somewhat above present levels before practicable salinity control measures can be put into effect.

There are several points at which the assumptions and economic analyses of the report are subject to question. We have foregone discussion of technical aspects of the report for the reason that we believe that the report adequately justifies the undertaking of feasibility investigations; that such investigations should and will be made; and that the technical aspects will be reviewed and modified as necessary in the course of those investigations.

The Interstate Stream Commission appreciates the opportunity given by the Environmental Protection Agency to review the report and your courtesy in forwarding these comments.

Sincerely,

S. E. Reynolds
Secretary

SER:re

UTAH

STATE OF UTAH—DEPARTMENT OF SOCIAL SERVICES

CALVIN L. RAMPTON
Governor
RICHARD P. LINDSAY
Executive Director

DIVISION OF HEALTH
44 MEDICAL DRIVE
SALT LAKE CITY, UTAH 84113
AREA CODE 801
328-6121

MAN J. OLSEN, M.D., M.P.H.
Director of Health

Board of Health
Air Conservation Committee
Health Facilities Council
Medical Examiner Committee
Nursing Home Advisory Council
Water Pollution Committee

BUREAU OF ENVIRONMENTAL HEALTH
72 East 4th South
Salt Lake City, Utah

September 14, 1971

Mr. R. L. O'Connell
Acting Interim Regional Coordinator
Environmental Protection Agency
760 Market Street
San Francisco, California 94102

Dear Mr. O'Connell:

The following comments relate to our review of the draft report of "The Mineral Quality Problem in the Colorado River Basin".

We believe that the broad policy objective should be to maintain salinity levels in the Colorado River reasonably near or lower than existing levels, but that authorized use of Colorado River waters must proceed with acknowledgement of the possibility of some uncontrollable salinity increases, as is inevitable from any beneficial use.

Since there is not enough information presently available for accurate predictions as to achievable salinity levels, we oppose the idea of setting specific limits at this time. Instead, we support the concept of early measures to determine feasibility of a basinwide salt load reduction program. Implementation of such a program would improve our knowledge of the overall control situation and permit development of achievable and enforceable specific standards at a later date.

We do not believe it appropriate to seek creation of a new agency or task group to develop additional salinity control criteria at this time. It seems logical that the present group of conferees, working in harmony with the Water Quality Office, can more effectively accomplish what is needed.

I question the advisability of an early re-convening of the Conferees since they appear to be in general agreement with the above comments.

Sincerely yours,

Lynn M. Thatcher
Deputy Director of Health
and
Conferee on Pollution of the Interstate Waters
of the Colorado River and its Tributaries

LMT:cc

cc: State Division of Water Resources
Dallin Jensen, Asst. Attorney General

062<

WYOMING

THE STATE OF WYOMING

Department of Health and Social Services

Division of Health and Medical Services

STATE OFFICE BUILDING CHEYENNE, WYOMING 82001

June 1, 1971

Mr. R. L. O'Connell
Acting Interim Regional Coordinator
Environmental Protection Agency
760 Market Street
San Francisco, California 94102

Dear Mr. O'Connell:

The draft reports on the Mineral Quality Problem in the Colorado River Basin have been reviewed by several state agencies. At this point in time, we feel it is not necessary to argue methodology or economic theory. Certainly competent personnel has been involved from the start. It is obvious that certain assumptions had to be made in conducting the study, and while we may not agree with all of these assumptions, the need for making them and the competence of the people involved in the study is unquestioned.

In the final analysis of this problem, it is realized that a general approach was necessary. Item 9 c. in the summary of the findings could be a valid alternate in a generalized approach. However, it has to be acknowledged at the start of any action program that such a limitation would not be acceptable to the State of Wyoming and probably other Basin States with undeveloped water resources. It must be firmly understood, at the start, that water quality standards will not be a means of circumventing the Colorado River Compact on water allocation.

Under Recommendations, Item 4 may be questionable, depending upon the powers granted. Certainly the State of Wyoming would not relinquish their authority concerning how and where water might be utilized within the State.

Attached are comments that are being submitted by the State Engineer's office.

Very truly yours,

Arthur E. Williamson

Arthur E. Williamson, M.S., P.E.
Director
Sanitary Engineering Services

AEW: cw
Attachment

cc: Floyd Bishop, State Engineer, Cheyenne

064

THE STATE OF WYOMING

State Engineer's Office

STATE OFFICE BUILDING CHEYENNE, WYOMING 82001

June 1, 1971

MEMORANDUM

TO: Interim Regional Coordinator,
Environmental Protection Agency
Region IX
760 Market Street
San Francisco, California 94102

FROM: Floyd A. Bishop,
Wyoming State Engineer FAB

THROUGH: Arthur Williamson, Conferee
Joint Federal-State "conference in the matter of Pollution of the Interstate Waters of the Colorado River and its Tributaries."

SUBJECT: Comments on the report entitled Mineral Quality Problems in the Colorado River Basin, dated November, 1970.

Dear Sir:

We have carefully reviewed the draft report on the Mineral Quality Problems in the Colorado River Basin, and our comments on that report are submitted herewith.

Throughout the report there are numerous statements to the effect that one of the alternatives for accomplishing a reduction of future salinity concentrations was limiting further use of water in certain areas of the river basin. This approach would be patently unfair to those states that are not yet using their full Colorado River Compact allocations, primarily the Upper Basin states.

The Upper Basin states ratified the Colorado River Compact permitting the Lower Basin states to develop under the assumption that the Upper Basin states were also entitled to develop at their own rate and use their allocation of water, thereby reducing the flow to the Lower Basin. In addition, since Upper Basin development has not been as rapid as that of the Lower Basin, the Lower Basin has been able to use a water supply which is better in both quantity and quality that it is ultimately entitled to. Therefore, it would be extremely inequitable to inhibit federal assistance to, or limit in any way, the continued development of, the Upper Colorado River Basin. It would in fact, be a circumvention of the provisions of the treaties and compacts which make up the "Law of the River."

The most equitable solution to the salinity problem is a basin-wide salinity reduction program, with its costs assigned to the beneficiaries of the improved quality water. This would hold true regardless of the physical location of the individual salinity control projects, or whether they be structures to improve irrigation efficiency or ponds to evaporate saline springs. Admittedly, the task of identifying all the beneficiaries of improved water quality would be a formidable one. The costs assigned to those beneficiaries who could not be readily identified should be absorbed by the Federal Government. The Federal Government has an inherent interest and responsibility, since it owns 70% of the lands within the Basin, and would be a prime beneficiary.

The report assigned one-half of the costs of irrigation improvement projects to salinity control and one-half to the irrigators benefited directly by such improvements. Perhaps this estimate of 50% is not an overstatement where irrigators suffer from water shortages and drainage problems as they generally do in the Lower Main Stem and the Southern California regions. But in areas where neither of these problems are serious, the probable benefits to a farmer from an improvement in his irrigation efficiency are less significant.

The report recommended that a State/Federal agency should carry on feasibility studies and otherwise administer basin-wide salinity control programs. We agree with that proposal and further suggest that the Bureau of Reclamation be given initial responsibility for carrying out the studies with close cooperation from the Basin States. We agree that the planning phase should be directed toward the objectives of providing sufficient information for developing an implementation plan, of providing the feasibility reports on which requests for construction funds for necessary control works can be based, and of identifying construction, operation and related costs which would be properly assigned to the beneficiaries and to other entities.

We appreciate the opportunity of commenting on the draft reports on the Mineral Quality Program in the Colorado River Basin. Your courtesy in extending the time for submitting comments to June 7 has been helpful.

This matter is of great significance to all of the states of the Colorado River Basin. We are anxious to be involved in the activities which may stem from this report and hereby request that you continue to keep us informed of progress made and actions taken on this subject.

FAB/TB/mt

cc: Governor Stanley K. Hathaway
A. E. Williamson

OTHER AGENCIES

UPPER COLORADO RIVER COMMISSION

355 South Fourth East Street
Salt Lake City, Utah 84111

July 2, 1971

Hon. William D. Ruckelshaus
Administrator
Environmental Protection Agency
1626 K Street
Washington, D. C. 20460

Dear Mr. Ruckelshaus:

In April, 1971 the Environmental Protection Agency transmitted for review by the seven Colorado River Basin States and other interested entities a draft summary report (with three appendices) entitled "The Mineral Quality Problem In The Colorado River Basin." This report was prepared by the Federal Water Quality Administration.

Enclosed is a copy of a resolution adopted by the Upper Colorado River Commission at its Adjourned Regular Meeting held in Denver, Colorado on June 30, 1971. This resolution expresses the basic elements of the position of the Commission's four member States on the mineral quality report.

The Upper Colorado River Commission is an administrative agency created by the Upper Colorado River Basin Compact. The Commission represents the States of Colorado, New Mexico, Utah, and Wyoming in matters pertaining to the development, utilization, and conservation of the waters of the Upper Colorado River Basin.

Sincerely yours,

Ival V. Goslin

Ival V. Goslin
Executive Director

IVG:hiw
Enclosure

CERTIFICATE

I, IVAL V. GOSLIN, Executive Director of the Upper Colorado River Commission, do hereby certify that the above Resolution was unanimously adopted by the Upper Colorado River Commission at an Adjourned Regular Meeting held at Denver, Colorado on June 30, 1971.

WITNESS my hand this 2nd day of July, 1971.

Ival V. Goslin
Executive Director

Resolution

by

Upper Colorado River Commission

re:

Draft Report Entitled, The Mineral Quality Problem In The Colorado River Basin by Federal Water Quality Administration

June 30, 1971

WHEREAS, on August 8, 1962, the Upper Colorado River Commission unanimously adopted a resolution favoring "a study of any and all measures for the reduction of the salinity of Colorado River waters delivered for use in the Republic of Mexico"; and

WHEREAS, on September 21, 1967, said Commission, after having been informed that the Federal Water Pollution Control Administration had proposed that quantitative criteria for total dissolved solids be set at various points in the Colorado River system based on an upper limit of 1000 mg/l at Imperial Dam, unanimously adopted another resolution stating that: "water quality criteria on the Colorado River should not preclude or interfere with the reasonable use of water in the Upper Basin within the terms of the Colorado River Compact"; and

WHEREAS, in April 1971, the Environmental Protection Agency transmitted to the States of the Colorado River Basin a preliminary draft of Summary Report on "The Mineral Quality Problem In The Colorado River Basin" prepared under the jurisdiction of the Federal Water Quality Administration of the Department of the Interior, and requested comments thereon; and

WHEREAS, said Summary Report constitutes only a reconnaissance step toward the solution of the mineral quality problem of the Colorado River system, and lacks sufficient information to assure that numerical salinity control standards would be equitable, workable, and enforceable; and

WHEREAS, said Summary Report contains certain recommendations including a recommendation that numerical salinity criteria of 1000 mg/l monthly average at Imperial Dam and 800 mg/l monthly average at Hoover Dam be implemented at this time. This recommendation is diametrically opposed to previously stated policies of the Upper Colorado River Commission and the major purpose of the Upper Colorado River Basin Compact "to secure the expeditious agricultural and industrial development of the Upper Basin, . . . ":

NOW, THEREFORE, BE IT RESOLVED by the Upper Colorado River Commission that:

(1) any broad policy objective pertaining to salinity control for the entire Colorado River System must treat the salinity problem as a basinwide problem that needs to be solved to maintain Lower Basin water quality reasonably near present levels while the Upper Basin continues to develop its compact-apportioned water and must recognize that water quality may be degraded until control measures become operable;

(2) numerical salinity control criteria should not be established until salt load reduction projects have been constructed and their operation proved practicable;

(3) the consumptive use of water in salinity control projects must be charged to the beneficiaries of those salinity control projects;

(4) the Bureau of Reclamation should be assigned the primary responsibility for feasibility investigations, planning, and implementing a basinwide salt load reduction program at Federal expense in recognition of the major responsibilities of the United States with respect to the Colorado River as an interstate and international stream; and

(5) the member States of the Upper Colorado River Commission should cooperate with the three lower Colorado River Basin States and the Federal government in the resolution of the mineral quality problem of the Colorado River System.

BE IT FURTHER RESOLVED that the Environmental Protection Agency be commended for making available copies of the Summary Report on "The Mineral Quality Problem In The Colorado River Basin" for review by interested agencies of the seven Colorado River Basin States; and

BE IT FURTHER RESOLVED that copies of this resolution be transmitted to the Administrator of the Environmental Protection Agency, Secretary of the Interior, Governors and Members of the Congress of the Colorado River Basin States, Commissioner of Reclamation, and other interested entities.

☆ GPO 790-479